ANNUAL PUBLIC HEALTH REPORT

OF THE

PROVINCE OF BIHAR

FOR THE YEAR

1940

BY

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CHAPTER I.

STATE OF PUBLIC HEALTH IN THE PROVINCE AND HISTORY OF THE CHIEF DISEASES—EPIDEMIOLOGY.

1. *Comparative incidence of the chief diseases.*—The undermentioned statement compares the ratios under the chief heads of mortality of 1940 with the average ratio of the previous 10 years.

Name of diseases	Urban.		Rural.		Combined.	
	Ten years average.	1940	Ten years average.	1940.	Ten years average.	1950
1	2	3	4	5	6	7
Cholera	0·5	0·2	1·1	0·5	1·1	0·5
Small-pox ..	0·5	0·9	0·4	0·5	0·4	0·5
Plague	0·06	0·03	0·09	0·03	0·09	0·03
Fevers	6·5	6·5	18·2	18·2	17·8	17·7
Dysentery and diarrhœa	0·5	0·5	0·9	0·06	0·1	0·1
Respiratory diseases ..	0·5	0·4	0·07	0·06	0·09	0·1
Injuries	0·5	0·4	0·2	0·2	0 3	0·2
All other causes ..	4·3	4·2	3·2	2·9	3·3	2·9
Total ..	13·6	13·1	23·6	22·6	23·2	22·2

The death-rate has decreased from 23·0 in 1939 to 22·2 per mille of population in 1940. The highest death-rate 17·7 was recorded from fevers. Deaths from malaria are included under the heading of " Fevers " and as malaria prevailed in several districts of the province during the year under review, it is presumed that the increased death-rate from fevers was chiefly due to greater number of deaths from this disease.

The urban areas, except a few small municipal towns, continued to record proportionately less number of deaths from cholera and fevers. This is obviously due to the maintenance of better standard of sanitation in the municipal towns, but the urban rates from the respiratory diseases again exceeded those recorded in the rural areas. The deaths from pulmonary tuberculosis, pneumonia and bronchitis following influenza are all reported under the head "Respiratory diseases ". Although no means exist to know the exact number of deaths from each of these diseases, it is presumed that a big proportion of these deaths was caused by pulmonary tuberculosis. The chief reason for higher death-rates from pulmonary tuberculosis in the urban areas of the province may be ascribed to unhygienic housing condition, overcrowding, malnutrition and lack of fresh air. Public opinion has been greatly roused in recent years against the scourge caused by this disease. Tuberculosis has been added to the list of notifiable diseases under the Municipal Amendment Act of 1935.

2. *Cholera statistics.*—The death-rate from cholera was 0·5 per mille in 1939 and 0·5 per mille in 1940. The districts of Shahabad and Champaran recorded the highest death-rate, viz., 1·6 and 1·5 respectively. Amongst the towns Lohardaga (1·7) and Gaya (1·5) reported highest death-rates.

3. *Cholera in the province.*—The total number of deaths from cholera in the province was 18,929 in 1940 as compared with 16,771 in 1939. The districts of Shahabad and Champaran registered highest number of deaths from this disease during the year, namely 3,218 and 3,263 deaths respectively. Of the other districts Gaya, Patna and the Santal Parganas recorded 3,122, 1,763 and 1,220 deaths from cholera during the year, respectively. The disease started in sporadic form in all these districts from January and prevailed till the end of the year. The maximum intensity was reached in all of them in September.

4. *Cholera preventive measures.*—In the absence of protected water-supply and efficient sanitary arrangements in rural areas it is a difficult problem to prevent the occurrence of cholera in villages and at times the infection assumes serious proportions. But in districts where a proper health organisation under a qualified health officer exists much has been done to control the epidemic of cholera and to prevent the spread of infection. To supplement the efforts of the local bodies in the control of cholera 34 Government epidemic doctors were detailed in the districts during the year under report.

Anti-cholera inoculations have now become very popular with the people who come forward voluntarily in increasing numbers for inoculation. Cholera vaccine is supplied free to the district boards and the municipalities and to other bodies or institutions on payment. A sufficient quantity is purchased and stored at the Government Vaccine Depot at Namkum from where the supplies are made on the requisitions by the local bodies and other institutions. To ensure the supply of requisite standard of vaccine, 21 samples of vaccine of different brews were sent to the Central Research Institute at Kasauli for analysis during the year and only the vaccine that proved satisfactory on analysis was issued for use. Proposals for regular testing of cholera vaccine at the Public Health Laboratory at Patna are under consideration. Stock of disinfectants such as bleaching powder and phenyle is kept in reserve at the offices of the district boards and municipalities. In cases where the stock is exhausted and the local bodies are not in a position to replenish them, the Civil Surgeons and the Medical Officers of Health send their requisitions for the same to the Director of Public Health.

In the rural as well as in the urban areas the health staff were given special instructions to collect and dispose of the discharges of cholera cases and to disinfect the infected places. General instructions regarding the protection of food stuffs from flies were also given to the local bodies.

The number of doses of cholera vaccine issued to the districts during the year was 828,200 as against 913,715 doses during the previous year.

With a view to combat epidemics and to give speedy medical relief to the people in the rural areas and also to carry out propaganda, a motor van was purchased and equipped with necessary drugs and appliances to be used as a Travelling Epidemic Dispensary under the charge of a qualified doctor. It was deputed to work in the cholera affected districts of Patna, Gaya, Shahabad and Hazaribagh. It was also utilised as an ambulance van during the session of the All-India Congress held at Ramgarh in the district of Hazaribagh in 1940 where it rendered valuable service by conveying patients to the hospitals. The Travelling Epidemic Dispensary visited 78 villages and 4 towns and the doctor in charge carried out 26,619 inoculations and distributed phage to 43,880 people. The utility of the Travelling Epidemic Dispensary has been much appreciated by the public.

5. *Small-pox.*—The total number of deaths from small-pox during 1940 was 18,384 as compared with 8,362 in 1939. The mortality rate for the year 1940 was 0·5 as against 0·2 of the last year. From a study of mortality rate from small-pox from 1922 to 1940 it appears that the lowest number of deaths from this disease was recorded in the province in 1922. The number of deaths then gradually increased every year till the maximum was reached in 1926. The figure then declined annually till the lowest was touched in 1929 with another gradual rise and a peak rise in 1933. From 1934 onward a gradual lowering in the yearly deaths from this disease was again experienced and 1937 recorded the lowest number of deaths since the last peak rise and the year 1940 witnessed another peak rise. A cyclic rise appears to be well marked in the epidemicity of small-pox in the province. The exact cause of this cyclic rise is not definitely understood, but it is believed that the effect of vaccination wears out between three to five years, with the result that greatest accumulation of susceptible individuals occurs during the year that correspond peak years. The highest death-rate from small-pox was registered

during the year in the districts of Monghyr (2·3), Bhagalpur (1·1) and Saran (0·7) while the districts of Muzaffarpur (0·06), Ranchi (0·1) and Singhbhum (0·3) returned the lowest death rates. Amongst the towns Jamalpur, Sasaram and Gaya reported highest death-rates viz., 4·4, 3·7 and 3·1 respectively. To prevent the epidemic of small-pox, temporary regulations were introduced in Ranchi town under the Epidemic Diseases Act.

Primary vaccination is compulsory under the Bengal Vaccination Act in all municipal towns as well as in the districts of Muzaffarpur, Patna, Gaya, Bhagalpur, Saran, Champaran, Darbhanga, Purnea, Hazaribagh, Shahabad, Manbhum, Ranchi (Sadr and Khunti subdivisions), Palamau (some villages in Sadr subdivision), Singhbhum (whole of Jamshedpur and Jugsalai Notified Areas) and the Santal Parganas (Deoghar subdivision and some villages in Pakur subdivision). All these districts (except Palamau, Hazaribagh, Singhbhum and Monghyr) maintained health organisation under district health officers. With the enforcement of the provisions made under sections 92 to 96 of the Local Self-Government Act, the responsibility of the administration of Act has been transferred to such local bodies as have taken up health organisation schemes and the health officers of the districts of Gaya, Shahabad, Saran, Muzaffarpur, Purnea, Darbhanga, Patna, Champaran, Bhagalpur and Manbhum have been appointed Superintendents of Vaccination. The inspection of vaccination is done by the district health staff in these districts and Government vaccination inspecting staff have been withdrawn. The Civil Surgeons function as the Superintendents of Vaccination in places where the local bodies have no health officers and Government exercise control over the administration of vaccination through the Assistant Directors of Public Health who make annual inspection tours and submit special reports on this work. The three special inspectors of vaccination that were appointed by Government a few years ago to ensure better supervision of the vaccination work continued to function during the year, one under each Assistant Director of Public Health. Their services were specially utilised in rendering assistance to the local bodies in the vaccination administration in accordance with the provisions of the Vaccination Act in the compulsory areas. They were also sent to most of the areas where small-pox broke out in epidemic form to induce the people to accept vaccination. A great deal still remains to be done before it can be hoped to make vaccination universally acceptable. It is expected that the remaining district boards of the province will soon take over direct control of this very important public health measure and provide facilities for vaccination and re-vaccination of the entire population.

The vaccine lymph manufactured at the Vaccine Depot, Namkum (Ranchi), is supplied free to the local bodies in the province. The lymph before being issued is thoroughly tested with regard to its potency and purity. The lymph produced is of high standard. This is borne out by the high percentage of successes obtained with its use in primary vaccination which has invariably been found to be 98 to 99 per cent. 2,082,439 vaccination operations were performed in the province during the year under report. Out of these 967,604 were cases of primary and 1,114,835 were those of re-vaccination.

Although vaccination confers protection against small-pox infection and about 15 to 20 lakhs of persons get vaccinated every year, the province continues to register large number of deaths from this disease and the incidence tends to show sharp rises at times. This is due to the fact that a large number of the children born every year escape even primary vaccination and the need for re-vaccination is not yet fully appreciated by a large number of the general public. It is, therefore, considered that so long, not only primary vaccination, but also periodical re-vaccination of the whole population, is not made compulsory, it will not be possible to ensure complete disappearance of the incidence of this disease.

6. *Plague.*—There were 1,040 deaths from plague in the province during the year as compared with 1,938 in the previous year. The death-rate was 0·03 as compared with 0·06 of 1939. Although incidence of plague has greatly declined, during the last decade in the province, there are still certain isolated foci in the districts of Champaran, Saran, Muzaffarpur, Darbhanga and North Monghyr where plague starts almost every year with the approach of the winter season, reaches its maximum intensity during February and March and declines with the advent of the summer months. The district of Saran with a total of 458 deaths recorded the highest death rate (0·1) followed by Shahabad (0·1) and Bhagalpur (0·08). In the district of Champaran plague was responsible for 75 deaths during the year and of these 28 deaths occurred in Bettiah town. Plague situation in Bettiah town continued to cause anxiety and cases

of plague went on occurring in spite of the usual preventive measures. Hospitalisation and treatment of cases were again taken up on the lines of the experiment of 1938. The temporary Plague Hospital was opened with necessary staff and equipment as in 1938. The hospital was in charge of the same officer, Dr. Wagle of the Haffkine Institute. Twenty beds were provided in the hospital. The work was started on the 9th January 1940 and closed on the 7th May 1940 and during this period 237 cases of plague were treated with the following results:—

Treatment.	No. of cases.	No. of deaths.	Case mortality per cent.
1. Anti-plague serum	70	20	28·5%
2. Sulphapyridin (M & B 693) ..	53	10	25·5%
3. Sulphathiazole	32	5	15·6%
4. Iodine solution intravenously ..	82	40	52·4%

The serum treatment again gave encouraging results.

To exercise better control over the anti-plague measures in Bettiah, anti-plague regulations under the Epidemic Diseases Act were introduced for one year. These regulations proved useful in enforcing measures against plague.

A campaign against rats and rat fleas by the use of cyno-gas operations was decided upon at the end of 1939. A scheme at an estimated cost of Rs. 15,000 was drawn up. Half the cost of the scheme was met by Government and the other half by the Bettiah Raj. The doctor serving under the Bettiah municipality was deputed to Lahore for training in cyno-gas operation. The cost of his training was met by the Bettiah Raj.

The cyno-gas operations were started on the 7th November 1940 and the scheme is to continue for 18 months. A total of 2,869 houses, 47,736 main rat holes and 15,000 subsidiary holes were treated with cyno-gas during the year 1940. The results so far appear to be encouraging. The recrudescence of plague has not been reported in Bettiah since the inauguration of the scheme.

Two Government epidemic doctors were detailed to Bettiah from the 4th November 1940 to assist the municipal staff and to receive practical training in the cyno-gas operation.

Muzaffarpur district recorded 80 deaths with a ratio of (0·03), Monghyr district recorded 23 deaths with a ratio of (0·01) and the Santal Parganas reported 11 deaths with a ratio of (0·005).

In Muzaffarpur district plague as usual was confined to the endemic areas of the Hajipur subdivision and a portion of Sadr subdivision with a mortality rate of 0·03 as against 0·1 of the previous year. Anti-plague inoculations as in previous year were performed by the dispensary and the public health doctors of the district board.

In Bhagalpur 195 deaths were recorded during the year as against 55 deaths in the previous year and a large number of persons were inoculated against plague.

In Shahabad plague broke out in February and continued till May. Altogether 198 deaths were recorded in the district during the year and anti-plague inoculations were carried out.

Besides carrying out anti-plague inoculations, people in the plague affected areas of the districts were advised to evacuate their houses on the advent of plague and live in temporary huts as long as plague infection lasted. These instructions were followed generally by the people.

7. *Dysentery and Diarrhoea.*—There were 2,817 deaths from this group of diseases as against 4,141 deaths in the preceding year and the mortality rate was 0·08 as against 0·1 in the previous year. The towns which recorded highest death-rates were Sitamarhi (2·5), Revelganj (2·4), Lalganj (2·1) and Gaya (1·3). The highest number of deaths occur from these diseases usually during the monsoon months, whilst the lowest is recorded during the driest part of the year. This fact demonstrates that the incidence of these diseases as well as of other bowel diseases is closely associated with the nature of conservancy service and the state of water-supply.

CHAPTER II.

FAIRS AND FESTIVALS.

A number of melas are held every year in the different parts of the province where large number of people, usually exceeding 50,000 assemble. Besides these, there are innumerable melas of local interest which are held in different months of the year and are attended by the inhabitants of the districts in which they are held and those of the adjoining ones.

Three melas, namely the Pitripaksha mela held at Gaya, Harihar Chhatra at Sonepur and Bhadra Purnima at Deoghar have more than local interest and attract a large number of visitors from the other provinces of India. These melas have mostly a religious significance. The collections of such a large number of people in fairs and melas have been frequently responsible in the past for the outbreak and spread of cholera in the province. But with the growth of public health organisation in the districts and the provision of adequate sanitary arrangements, the risk of cholera breaking out at these pilgrimage centres has been much reduced during recent years. Protected water-supply and arrangements for the quick removal of refuse and filth have been important factors in controlling and checking the outbreak of cholera at the melas.

The Sonepur mela.—The Sonepur mela which is considered to be the largest cattle fair in the world was held during the year from the 10th November 1940 to the 24th November 1940 and the principal bathing day fell on the 14th November 1940. Over four lakhs of people visited the fair on the principal bathing day and on average about one lakh camped in the mela area during the whole period. 37,509 animals were brought for sale in the mela areas; of these 600 were elephants, 2,450 horses, 33,813 cattle, besides 50 camels, 42 goats and 500 birds. 232 prostitutes camped in the mela area this year as against 249 in the previous year.

The whole mela area, as in the previous years, was divided into three sections—for the purposes of sanitary arrangements—one doctor with a suitable staff of sweepers, doms, road cleaners, sanitary jamadars and a health inspector was placed on duty in each section. A doctor was also placed on epidemic duty at Pahlezaghat and one on general epidemic duty in the fair. The Health Officer, District Board, Saran, was on duty from the 10th to the 24th November and the Assistant Director of Public Health, North Bihar Circle, camped in the mela from the 11th November to the 23rd November. The Director of Public Health, Bihar, visited the mela area on 15th November and inspected the various sanitary arrangements made there.

Special sanitary arrangements, as in previous years, were organised by the Saran district board health staff under the immediate guidance of the Assistant Director of Public Health, North Bihar Circle. Six Government epidemic doctors were also deputed for mela duty to work in collaboration with the board's health staff. This staff worked hard to maintain the general sanitation of the mela by the prompt removal of all filth and other sources of nuisance from the area and took adequate preventive measures against infectious diseases, specially cholera. 32 cases of cholera in all occurred in the mela area and all of them were immediately removed for treatment to the temporary cholera hospital and of these only one died while the rest were discharged as cured. The permanent district board dispensary at Sonepur and the temporary Isolation Hospital, and the three temporary dispensaries, one in each section remained open from the 10th to the 24th November to treat cases of sickness during the mela period. An ambulance *doli* was posted in each section at the dispensary to carry cases suffering from infectious diseases to the Isolation Hospital.

Adequate arrangements for the supply of protected water to the people existed throughout the mela period. The main drinking water-supply, as in previous years was made available from the Sonepur Government Water-supply which consisted of four deep tube-wells each yielding about 4,000 gallons of water per hour. 40 permanent stand-posts and 19 overhead tanks each having 8 taps and 65 temporary stand-posts were also put up to make the supply uniformly available throughout the mela area. No definite scarcity of water was felt in the Hathisar area. But on the crowded days of the mela, a shortage was noticed between the Nakhas and the temple areas and water was also found to be flowing at a very low pressure in the Bailhatta areas and this caused general shortage of drinking water in that area, specially on the bathing day. The whole water-supply and all the 62 wells belonging

to the district board and all wells belonging to private persons in the mela areas and those on the different roads converging to the mela were chlorinated or disinfected with bleaching powder before the commencement of the mela, and afterwards they were regularly treated with cholera bacteriophage. Arrangements were also made on the lines of previous year to render the water of Mahura, Mahi and Gandak rivers unfit for drinking purposes by mixing kerosene oil.

Sixty-one sets of trench latrines with an accommodation for 305 seats were provided for the whole mela area and of these 20 trench latrines each with an accommodation for 5 seats were put up in the Ghat areas as in the past years. Two sets of septic tank latrines each with an accommodation for four and ten seats respectively, fitted with auto-flush arrangements that were installed in 1937, were also made available for the public use. Besides these, 50 bore-hole latrines fitted with movable cement concrete seats were also put up. But as the number of latrines still fell far short of the actual requirements of the vast crowd visiting the mela, a large number of people eased themselves in the open field and the moving squad of sweepers on duty had to remove the night-soil found littered in the congested areas and trench it in suitable places, although experience showed that no amount of such attempt to pick up and bury the night-soil would satisfactorily remedy the condition unless adequate number of properly constructed latrines are provided.

Eight rubbish carts and 56 sweepers were employed for road sweeping work and regular road watering was done with only two motor lorries which were available during the mela.

Four samples of Ghee were taken by the Health Officer, District Board, Saran and sent for chemical analysis to the Public Health Laboratory, Patna and a number of stale food-stuffs were also seized by him and destroyed with the consent of the owner. This action improved the quality of the food sold in the mela to a certain extent.

Members of the various voluntary associations such as the Bihar Provincial Seva Samiti, the Hindusthan Boy Scout Association, Bihar, Provincial Boy Scout Association, and Bharat Seva Sangh which camped in the mela area as well as the Police constables on patrol duty gave valuable help to the dispensary doctors and the health staff in the mela.

Sanitary arrangements at Pahlezaghat and Sonepur Railway Stations were made by the Railway. The staff deputed for the inspection of passengers in trains, detected and isolated cases suffering from infectious diseases. The carriages were disinfected regularly and the drinking water-supply in the station area was also treated with choleraphage every third day. Strict vigilance was maintained to detect cases of infectious diseases in the mela area and prompt measures were taken on receipt of information of their occurrence. A Red Cross Railway Van was placed at the Sonepur Railway platform for use as a first-aid post and was kept open all along under the charge of a railway doctor.

Public Health Propaganda was carried out as usual by means of posters hung in conspicuous places, printed leaflets on public health subjects distributed among the public and magic lantern demonstrations carried out in the mela area.

Pitripaksha mela.—The Pitripaksha mela at Gaya commenced from the 16th September 1940 and ended on the 1st October 1940.

The influx of pilgrims was mostly by railway but many came by private and public vehicles and also on foot. 70,535 pilgrims visited Gaya by rail as against 73,488 in 1939. As usual the pilgrims were accommodated in the licensed lodging houses, Dharamsalas and Jatri Nivas of Bharat Seva Sangh. Special arrangements were made for the comfort of the pilgrims during the mela period.

One hundred and ninety-six lodging houses providing accommodation for 12,856 pilgrims were licensed during the year under report. They were regularly inspected and were kept clean as far as possible. The Health Officer of the Gaya municipality functions as the Secretary to the Lodging House Committee and is entrusted with the duties of inspecting the Lodging Houses. The District Magistrate, Gaya and the Assistant Director of Public Health, South Bihar Circle and the Director of Public Health, Bihar, visited the mela. All roads and lanes of the mela area were kept clean and all nuisance and filth promptly removed. The drains were daily cleaned and bleaching powder mixed with lime was freely sprinkled over th[illegible]

carts for disposal of extra night-soil of the pilgrims was abolished during the year under report and the night-soil contractor of the Gaya municipality supplied extra lorries with trailers for the removal of night-soil from the mela area.

The Vedis and the sacred tanks were cleansed by the Lodging House Committee. All the tanks were then treated with copper sulphate so as to make the water clear. The Gaiwals made their own arrangements for the removal of Pindas from the sacred tanks and from the Vishnupad temple. Regular cleaning of all latrines was carried out by the conservancy staff.

The Inspector-General of Civil Hospitals, Bihar, deputed five sub-assistant surgeons for duty during the mela period. Medical centres were opened at five different places and one sub-assistant surgeon was placed in charge at each centre. They were provided with medicines and other necessary equipment for treatment of minor ailments amongst the pilgrims. One vaid and one Homeopath attended respectively the two centres at Tilha Dharamshala and Surajkund. They were appointed by the Lodging House Committee for the mela period.

The Boy Scouts Association and the Hindusthan Scouts Association both rendered useful service to the pilgrims in all possible manner and also co-operated fully with the Police.

The railway provided a medical centre within the railway premises at Gaya. The district boards of Patna and Gaya also made sanitary arrangements at Poonpoon and Palmerganj respectively during the Pitripaksha mela.

Arrangements for continuous water-supply were made throughout the mela period. The total daily supply amounted to 18 lakh gallons which were chlorinated. The wells were treated with choleraphage regularly and so also the water-supply reservoir at the railway station. 631 wells within the mela area were disinfected with bleaching powder. Unwholesome articles of food were destroyed with the consent of the owners. 26 samples of Ghee were sent for chemical examination to Government Chemical Examiner of which one was found up to standard, 6 of doubtful purity, 13 of below standard, one not genuine, one highly adulterated and three were not ghee at all.

The district of Gaya was heavily affected with cholera during the mela season and stray cases were reported even in the town. The Director of Public Health, Bihar deputed an epidemic doctor for mela duty who inoculated and phaged the people in the town. Only four cases of cholera were admitted into the infectious Diseases Hospital out of which two were cured and two died.

Bhadra Purnima mela.—The Bhadra Purnima mela at Deoghar town was held from the 14th September 1940 to the 18th September 1940. Compared with the last year the mela was bigger this year. The total number of pilgrims was estimated to be 16,000. The usual sanitary arrangements were made by the East Indian Railway at Jasidih and Deoghar railway stations, by the municipality and Lodging House Committee in Deoghar town and by the district board, Santal Parganas, in the areas adjacent to Deoghar town as well as at Basukinath and other places frequented by the pilgrims. All public health arrangements made in connection with the mela worked satisfactorily. There was no case of cholera at Deoghar during the mela period.

For the accommodation of the pilgrims, 73 Lodging Houses including one temporary lodging house were licensed. There are seven Dharamshalas near the temple. These were as usual fully utilised by the pilgrims. Daily about 2,920 pilgrims were accommodated in the Lodging Houses and about 3,000 pilgrims in the Dharamshalas. The camping grounds for the pilgrims were also fully utilised.

The East Indian Railway deputed one doctor and one Sanitary Inspector at Jasidih and Deoghar railway stations. The railway premises were kept clean and tidy. The sources of water-supply were chlorinated. Arrangements for first-aid and emergency medical relief were kept ready under the Medical Officer.

The Health Officer, Deoghar municipality, looked after the sanitation of the town. Four medical relief centres were maintained under him. The streets and the camping grounds were kept clean. All the drains in the pilgrim area were also cleaned and treated with bleaching powder. All latrines were properly attended to. All the wells of the town were disinfected with chlorine and subsequently treated with cholera bacteriophage. The

distribution of drinking water through the overhead reservoir and the pipe line in the camping grounds was satisfactory. In addition to permanent latrines, 15 sets of trench latrines were put up in the pilgrim area.

The Assistant Director of Public Health, Chota Nagpur Circle, supervised the sanitary arrangements of the Bhadra Purnima mela at Deoghar. The Health Officer, District Board, Santal Parganas, and the epidemic doctors deputed by the Public Health Department and the district board assisted by the vaccinators of the board worked hard in the rural areas through which the pilgrims passed. A large number of pilgrims were inoculated and given choleraphage.

Besides these three important fairs, a large number of other fairs are also held in the province. In the districts, having health organisation, adequate sanitary arrangements were made on these occasions by the local bodies under the direct supervision of the health officers. All the important melas were visited by the Assistant Directors of Public Health who helped the local bodies in organising the sanitary arrangements. Government epidemic doctors were detailed by the Public Health Department to places where their services were considered necessary.

Sanitary arrangement at Ramgarh during the All-India National Congress.—The session of the All-India National Congress was held at Ramgarh in the district of Hazaribagh in March 1940. A special health officer with a subordinate staff of three Government epidemic doctors, three health inspectors and some sweepers were deputed for undertaking necessary sanitary measures there. Government sanctioned a grant of Rs. 2,967 for the purpose. The measures were undertaken under the supervision of the Assistant Director of Public Health. With the constitution of a Notified Area Committee in Ramgarh the services of the sanitary staff were transferred to the control of the Executive Officer. The sanitation of the area remained well controlled and no disease in epidemic form was reported.

CHAPTER III.

MUNICIPAL SANITARY ADMINISTRATION.

1. The sanitary administration of the municipalities is far from satisfactory. The standard of sanitation in a municipal town is low and the municipal subordinate health staff have also low ideals and are mostly unmethodical and irregular. The supervision which the municipal executives exercise over their staff is not very effective.

The municipal equipment is often found inadequate and uncared for. The rate-payers' complaints are not promptly looked into. The Vaccination Act is in force in every town and yet many unvaccinated grown-up children are found everywhere. Cholera, Tuberculosis, Small-pox and Plague are now notifiable diseases but cases are neither timely reported nor properly recorded by the municipalities. Despite the Food Adulteration Act, the sale of adulterated food stuffs continues. The building regulations are often ignored and unhygienic houses at unsuitable sites are not infrequently constructed.

The Assistant Directors of Public Health have to inspect the municipalities at the district headquarters once a year and the other small municipalities once in two years. Their inspection reports are forwarded to Government and to the municipalities and other officers concerned. Of 53 municipalities in the province, 28 were inspected by them during the year. The recommendations made in the reports for the improvements of the health and sanitation of the towns were considered by the municipalities and some of them were carried out but no marked improvements were noticeable. The efforts of the health officers, where such officers exist, to improve the cleanliness of the towns were often not successful. The municipalities of Patna, Gaya and Ranchi have health officers belonging to the Provincial Public Health cadre while the health officers of the towns of Bhagalpur, Darbhanga, Muzaffarpur, Monghyr and Deoghar are paid by the municipalities. Some important municipal towns such as Hazaribagh, Arrah, Chapra, Purnea, Purulia, Siwan and Bettiah are still without any health officer.

For want of sufficient funds the municipalities are no doubt greatly handicapped and are unable to take up costly schemes for improvements of the drainage, conservancy and water-supply but they can certainly bring about

marked improvements by carefully considering and carrying out the inspecting officers' recommendations, by judiciously spending money over sanitary projects by utilising to the fullest extent the staff and equipment they have got and by exercising strict control and supervision over the staff.

2. *Expenditure on sanitation in municipal towns.*—The statement below shows the receipt and expenditure for sanitary purposes during the year 1939-40 as compared with those of the previous year :—

Number of municipalities.	Total receipt including opening balance. 1938-39	1939-40	Heads of expenditure.	1938-39	1939-40	Percentage of expenditure to the total receipts. 1938-39.	1939-40.
1	2	3	4	5	6	7	8
	Rs.	Rs.		Rs.	Rs.		
53	51,20,627	53,23,307	Conservancy ...	10,10,534	9,66,896	19·7	18·2
			Drainage ...	1,72,139	1,95,147	3·3	3·7
			Water-supply ...	3,65,930	6,53,907	9·1	12·3
			Vaccination ...	13,520	13,477	0·2	0·3
			Epidemics ...	15,950	23,001	0·3	0·4
			Markets and fairs ...	39,081	27,882	0·7	0·5
			Other sanitary Charges	17,402	11,033	0.3	0·2
			Public Health sfaff ...	68,343	59,525	1·3	1·1
			Total ...	17,02,949	19,50,868	33·2	36·6
				Rs.	Rs.		
*Contagious Diseases Hospitals			... ...	3,80,754	3,59,260		

*This represents cholera hospitals and leper asylums, etc. An expenditure of Rs. 3,59,260 has been incurred in 1939-40. The expenditure is mainly met from Government grants.

3. *Chief sanitary works in municipal towns.*—The details of expenditure under this head are dealt with in the report of the Public Health Engineer, Bihar.

CHAPTER IV.

RURAL SANITARY ADMINISTRATION.

Rural sanitation is still practically non-existent. The villages are dirty and their condition becomes worse during the rainy season. The village conservancy still remains a difficult problem to deal with. Attempts, however, are often made, wherever possible, to improve the wells in the rural areas.

The public health organisation scheme is now working in the districts of Patna, Gaya, Shahabad, Saran, Champaran, Muzaffarpur, Darbhanga, Bhagalpur, Purnea and Manbhum. The health officers under the district boards of Gaya, Shahabad, Saran, Champaran, Muzaffarpur, Darbhanga, Bhagalpur, the Santal Parganas, Ranchi, Hazaribagh and Singhbhum are paid by Government and others are paid by the boards. Similar organizations will soon be started in the districts of the Santal Parganas, Hazaribagh, Ranchi, Singhbhum, Monghyr and Palamau.

With the introduction of the health organisation scheme in the districts of Patna, Gaya, Shahabad, Saran, Champaran, Muzaffarpur, Darbhanga, Bhagalpur, Purnea and Manbhum and with the help of the epidemic staff in other districts it has now become possible to disinfect the wells or to treat them with choleraphage even in the remotest villages. These organisations have proved very useful in taking prompt measures, which, however, are more, or less, of a temporary nature, against the epidemics in the affected areas of the districts. Constructive works of a permanent nature for the prevention of such diseases as cholera, malaria and ankylostomiasis have not

been taken up in the rural areas. Under the scheme the health officer of a district functions as Superintendent of Vaccination and in districts where no such scheme has been adopted the Civil Surgeons continue to be Superintendents of Vaccination.

There are also 168 union boards and 22 union committees in different districts of this province and these local bodies have in some places improved a few wells and roads but have done very little in the way of sanitating the villages. The Food Adulteration Act has been enforced in some areas but the results obtained are not encouraging. It is, however, gratifying to note that vaccination is carried out even in the remotest villages. Although the Vaccination Act has been extended to Patna, Gaya, Shahabad, Saran, Champaran, Muzaffarpur, Darbhanga, Bhagalpur, Purnea, Manbhum and Hazaribagh districts and to a few selected areas in other districts there are still many people who are indifferent or averse to vaccination and manage to keep their children unprotected. Propaganda by the health staff is being carried on. Neither the Birth and Death Registration Act, nor the Epidemic Diseases Act is in force in the rural areas. It has not yet been found feasible to enforce any building regulations and the construction of primitive and unhygienic huts and houses in the rural areas is the general rule. How to improve the housing conditions in the villages is another big problem which has not yet been seriously taken up. In the present circumstances the number of pits and excavations for the purpose of getting earth for the building of huts is increasing thereby making the villages more and more water-logged and insanitary and affording more places for the mosquitoes to breed in. The health and sanitation of the rural areas are a serious problem which the Government are now faced with.

2. *Expenditure on sanitation by district boards.*—The following statement shows the receipt and expenditure of district boards under the principal headings of sanitation :—

No. of district boards.	Total receipt including opening balance.		Heads of expenditure.	1938-39	1939-40	Percentage of expenditure to the total receipts.	
	1938-39	1939-40				1938-39	1939-40.
1	2	3	4	5	6	7	8
	Rs.	Rs.		Rs.	Rs.		
16	1,50,65,688	1,16,35,150	Conservancy ...	2,36,588	31,876	1·5	0·2
			Drainage	11,170	4,677	0·07	0·04
			Water-supply ...	1,34,175	1,21,086	0·7	1·04
			Vaccination ...	14,841	13,555	0·09	0·1
			Epidemics... ...	77,304	96,515	0·5	0·8
			Markets and fairs ...	12,118	9,977	0·08	0·09
			Total ...	4,76,196	2,77,686	3·1	2·3

CHAPTER V.

MALARIA AND KALA-AZAR.

Malaria.—No separate returns of mortality from malaria are recorded and all deaths from malaria are included under deaths from 'Fevers' which include a group of diseases in which fever was a predominant symptom. But it is presumed that a large proportion of deaths returned under 'Fevers' is caused by malaria. The deaths under 'Fevers', therefore, indicate the incidence of malaria in the province. Out of a total number of 719,906 deaths registered in the province during the year, the group of diseases, included under 'Fevers' was responsible for 572,371 deaths or 79·5 per cent of the total deaths as against 601,893 deaths or 80·8 per cent of deaths in the previous year. The province recorded during 1940 a death rate of 17·7 from 'Fevers' as against 18·6 in 1939. The highest rates for the year were recorded in the districts of Palamau (23·9), Purnea (23·1), Gaya (21·9), Muzaffarpur (21·3), Shahabad (19·2) and Darbhanga (18·6). A total of 1,281,277 cases of malaria were treated in the hospitals and dispensaries of

the province during the year and of these the highest number of cases (264,378) was treated in the district of Purnea, whilst Shahabad recorded the lowest number of cases (29,056) treated for malaria.

Malaria is more or less prevalent throughout the province and cases occur in every district almost throughout the year. The highly malarious tracts where the disease assumes epidemic form are (1) a narrow long belt in North Bihar contiguous to Nepal Terai, (2) endemic areas of Champaran and Purnea, (3) the group of villages on the outskirts of Chota Nagpur plateau in the neighbourhood of hills and river ghats in Gaya district and (4) scattered patches in the districts of Ranchi, Hazaribagh, Palamau, Singhbhum and Manbhum adjecent to the range of hills in Chota Nagpur plateau.

Muzaffarpur.—The incidence of malaria was markedly less severe in 1940, than in the previous year. Out of the seven anti-malaria centres working in the previous year, five centres, viz., Parsauni, Berua, Pateypur, Gharbara and Narma malaria centres functioned during the year 1940, while the two centres, viz., Majorganj and Rampurhari were shifted to Jaintpur and Karnauti. Besides these centres there were fourteen sub-centres which worked under the main centres. Intensive anti-mosquito measures were carried out in 62 villages with marked reduction in the number of mosquitoes. Spleen census was also taken up in 118 villages by the Medical Officers in charge of these centres. The results of spleen survey showed definite improvment in the incidence of malaria in Parsauni area and the centre had to be shifted to other place where the incidence was higher.

66,333 cases of malaria were treated at these centres during the year 1940, as against 133,113 in 1939. Besides this, 1,062 cases of kala-azar, 638 cases of hookworm disease and 5,604 other cases were also treated. A total of 409 lbs. 10 oz. 2 dr. of quinine was supplied free by Government, and two Government epidemic doctors were detailed during the year. Government gave a grant of Rs. 10,000 for anti-malaria and anti-mosquito measures to the district board and Rs. 400 to Muzaffarpur municipality. Malaria did not appear in an epidemic form in the town.

To meet the popular demand indigenous system of treatment was first introduced in this district in the year 1938, and it is continuing since then. Two Tibbi and five Ayurvedic dispensaries functioned during the year under report. From the report it appears that a large number of cases were treated by Vaidyas and Hakims in charge of these dispensaries.

Darbhanga.—Four anti-malaria centres, viz., Tajpur, Serairanjan, Akhtiarpur and Pandaul worked throughout the year. Besides these centres, malaria cases were also treated at four kala-azar centres in the district, viz., Bheja, Narar, Bhatgawan and Erout Musehri throughout the year. Arrangements were also made for the distribution of quinine and treatment of malaria cases through the permanent health staff and temporary health inspectors in different areas of the district where the incidence was found to be higher. A total of 135,843 malaria cases was treated during 1940, and of these 85,580 cases were treated at the four main malaria centres, while the remaining 50,263 cases were treated at the kala-azar centres and other areas in the districts. Under the main centres there were 15 sub-centres. Anti-mosquito work was also carried out in Gangapur and Pandaul areas. Spleen census was also carried out in 46 villages. Four Government epidemic doctors were detailed and 475 lbs. 12 oz. of quinine was supplied free by Government. Government gave a grant of Rs. 4,000 to the district board and Rs. 600 to the Darbhanga municipality for anti-malaria and anti-mosquito measures in the district and Municipality, respectively.

Champaran.—Malaria was prevalent in some parts of the district during the year under report. The disease was serious specially in Ramnagar and Shikarpur, where large number of deaths were recorded.

In the early part of the year only one anti-malaria and anti-mosquito centre worked in the district from January to March 1940, but in the latter part of the year two anti-malarial treatment centres one at Bhiteharwa with three sub-centres, viz., Parsa, Behra and Manjharia in Shikarpur police-station and the other at Harnataur with three sub-centres, viz., Tupharia, Samra and Kothraha (Lachmipur) were started from the 1st November 1940. An anti-mosquito unit also worked attached to Bhiteharwa centre.

10,550 malaria patients were treated at these centres and sub-centres and spraying was carried out to kill adult mosquitoes in 1,450 villages. House spraying was carried out in four villages, viz., Pakri, Belwa, Zaria and Murli. Spleen census was taken up in 168 villages.

A Government grant of Rs. 2,000 was made and 130 lbs. of quinine were supplied free by Government.

Bhagalpur.—Four malaria centres, viz., Hatwaria, Nawabakhar, Karjain and Phulout (subsequently shifted to Chandrain) functioned during the year. Arrangements for malaria treatment was also made at four Government kala-azar centres, two subsidized dispensaries, six permanent dispensaries and one centre under Assistant Health Officer during different periods of the year. Anti-mosquito work was carried out in 30 villages under Bongaon police-station and 15 villages under Supaul police-station from 1st March 1940 to the 15th July 1940. 311,345 malaria cases were treated during the year. A Government grant of Rs. 7,000 was made for anti-malaria and anti-mosquito measures in the district and 262 lbs. of quinine were supplied free by Government.

Monghyr.—Anti-malarial measures continued in the year 1940. Three treatment centres, viz. (1) Alouli in Khagaria police-station with two sub-centres, viz., Jogia and Goriami, (2) Thuthi in Chontham police-station with three sub-centres, viz., Dhamara, Sulkhnabazar and Badlaghat, and (3) Saraunja in Bakhtiarpur police-station with two sub-centres, viz., Kusmi and Kochardawa, were started by the end of October 1940. Mainly malaria cases were treated at these centres but cases of other diseases that attended these centres were also given treatment. 17,881 malaria patients were treated.

Two anti-mosquito units also functioned, one attached to Saraunja centre and the other to Thuthi centre.

Government gave a grant of Rs. 2,000 for anti-malarial measures and 71 lbs. of quinine were supplied free. A special malaria officer with M. B., D.P.H. qualifications was detailed by Government to supervise the working of the anti-malaria scheme in the district as there was no Health Officer of the district board.

Purnea.—The district of Purnea is highly malarious. It may be attributed to its geographical features, characteristic humid climate, abnormal rainfall, abundant wild bushes and jungles and extensive marshy and water-logged areas providing innumerable breeding places. During the year under review the disease however did not appear in epedimic form. It may be due to scanty rain during the year. 16 malaria centres worked during the year. Ten of these worked throughout the year and six were opened from September 1940. Three centres, viz., Ichalo, Pothia and Delhi Dewanganj were converted into permanent dispensaries during the year. Over and above these centres, three anti-mosquito centres, viz., Kamp in the Sadr subdivision, Biri in Araria subdivision and Bugua in Kishanganj subdivision also worked from the latter part of October 1940. Spleen census was taken up by four medical officers in 64 villages. 255,998 malaria cases were treated during the year. 331 lbs. of quinine and 125 lbs. of chinchona febrifuge were supplied free by Government and also a Government grant of Rs. 7,000 was made for anti-malaria and anti-mosquito work in the district.

Manbhum.—Eight anti-malaria centres were opened for about six months for carrying out intensive treatment. A total of 11,979 patients was treated at these centres. Anti-mosquito measures were mainly directed against the breeding grounds in two centres, viz., at Baghmundi area and Chandil. Government gave a grant of Rs. 2,500 and supplied 105 lbs. of quinine free to the district board.

Ranchi.—Three anti-malaria centres viz., at Kuru, Palkot and Kolebira functioned throughout the year and one centre at Jonah for about four months. These centres included 34 villages where intensive anti-malaria operations were carried out. A total of 1,898 patients received treatment at these centres. Thirteen more malaria treatment centres were opened by the district board in different parts of the district. Government gave a grant of Rs. 2,000 for the measures and supplied free of cost 61 lbs. of quinine to the district board.

Hazaribagh.—One anti-malaria centre was opened at Simaria for about six months. As the district board could not spend the Government grant of Rs. 915 made in 1939, the amount was carried over for expenditure in the year under report. A free supply of 28 lbs. of quinine was made by Government to the district.

Singhbhum.—One anti-malaria unit worked at Jamda. A free supply of 20 lbs. of quinine was made by Government to the district board.

Palamau.—An anti-malaria scheme was introduced in Netarhat under the direction of the Assistant Director of Public Health and a Government grant of Rs. 600 was made for the purpose. A further sum of Rs. 1,774 was sanctioned by Government for anti-malaria measures in other areas of the district.

Santal Parganas.—Two anti-malaria centres, viz., in Rajmahal and Pakur subdivisions worked for the whole year. Three anti-mosquito units were also started at Rajmahal, Hariganj and Pakur. A total of 1,283 patients received treatment at these centres. A Government grant of Rs. 2,000 was made for the carrying out of the measures. A further Government grant of Rs. 1,260 was also made to the district board for undertaking a careful malaria survey side by side with the anti-malaria scheme in Rajmahal. A free supply of 95 lbs. of quinine was made to the district board during the year under report.

Malaria Survey Scheme.—With a view to study local condition that favour the incidence of malaria and to organise anti-malarial measures on a systematised plan, Government decided that a malaria survey should be taken up in the four districts—Muzaffarpur, Darbhanga, North Bhagalpur and Purnea—in the first instance and sanctioned a Malaria Survey Scheme at an estimated cost of Rs. 23,696 for six months. Four units, one in each district consisting of one sub-assistant surgeon, one sub-overseer, two health inspectors, one laboratory assistant, one clerk, two peons, eight menials and one sweeper, were started in September 1940 and the Health Officers of the district boards concerned were placed in charge of the work. The Assistant Director of Public Health, North Bihar Circle, supervised the malaria survey operations. The details of the scheme were discussed and worked out at a conference of the Health Officers of the district boards concerned, the Assistant Director of Public Health, North Bihar Circle, the Officer in charge, Nutrition Scheme and the Director of Public Health. Necessary training was given to the Malaria Survey party at Darbhanga Medical School from the 2nd September 1940 to the 24th September 1940, by the Health Officer, district board, Darbhanga, in collaboration with Dr. O. R. Smith, Officer in charge, kala-azar enquiry and Dr. K. Mitra, Officer in charge, Nutrition Scheme, Bihar and the Assistant Director of Public Health, North Bihar Circle. After the completion of the training, the units started their work in some of the highly malarious areas in the districts from the last week of September 1940, viz., Gangapur in Darbhanga district, Pateypur in Muzaffarpur district, Bhaptiahi in Bhagalpur and Islampur in Purnea district. The work was carried on during the remaining portion of the year.

2. *Sale of quinine.*—Sale of quinine treatments was continued at the various post offices in the province. These treatments were as usual supplied to the post offices by the Civil Surgeons who obtain their requirements from the Presidency Jail at Calcutta. Each treatment consisted of twenty tablets of four grains each and each tube containing twenty tablets was sold at five annas and three pies.

385·5 pounds of quinine sulphate in tablet form were sold during the year under review as against 378·1 pounds in the previous year. The largest quantities were taken by the districts of Purnea, Bhagalpur, Ranchi and Manbhum.

3. *Spleen census.*—The Assistant Director of Public Health, Chota Nagpur Circle, carried out spleen census during his vaccination tours in the districts of Ranchi, Singhbhum, Santal Parganas and Hazaribagh. He examined spleen of 2,703 children who came from 127 villages and of these 569 children showed enlargement of spleen. This showed a spleenic index of 21·05 for the total number of children examined, but when calculated for the district figures, the index came to 48·88, 52·12, 13·63 and 24·37 for the districts of Ranchi, Singhbhum, Santhal Parganas and Hazaribagh, respectively.

Kala-azar.—The 20 special kala-azar centres, viz., eight in the district of Purnea and four in the districts of Darbhanga, Muzaffarpur and North Bhagalpur that were started in the year 1939-40 continued to function throughout the year under report. Each of these centres had one medical officer, one compounder, one peon and one part-time sweeper. Most of the centres had one or two sub-centres attached and some of them were shifted from the areas where they were originally opened after liquidating the cases to some extent to such other areas where the incidence was reported to be

high. These centres continued to impart treatment for malaria and hook-worm cases. These centres were run entirely at Government cost.

A total of 6,081 kala-azar cases were treated in Muzaffarpur district, 14,335 in Darbhanga district, 7,988 in Purnea district and 4,891 in North Bhagalpur district. Besides this 50,825 malaria cases were treated in all these centres.

The Medical Officers in-charge of the kala-azar centres, carried out systematic serum tests to diagnose kala-azar cases and some of them took up kala-azar survey in the neighbouring villages.

18,380 grms. of kala-azrr drugs were supplied free by Government as against 7,000 grms. supplied last year.

CHAPTER VI.

Maternity and Child Welfare.

The Maternity and Child Welfare Society, which was constituted in 1928 stepped into the 12th year of its existence in 1940. The personnel of the Managing Committee which manages the affairs of the Society remained the same as before. Lady Stewart, wife of the Governor, was the President, the Inspector-General of Civil Hospitals and the Secretary to the Bihar Branch of the Red Cross Society were the Joint Honorary Secretaries and the Accoutant-General, the Treasurer. Two meetings were held during the year.

The income of the Society in the year amounted to Rs. 10,164-8-0. Out of this Rs. 9,000 was received as grant from Government, Rs. 730 was derived as interest on investment and Rs. 429-8-0 as interest from Syed Md. Mehdi Hassan Fund. The expenditure amounted to Rs. 8,662-6-9 which was incurred on account of grant sanctioned to seven centres, honoraria to clerical staff and bank's commission, postage, etc.

The year opened with a balance of Rs. 5,061-14-2 and closed with Rs. 6,563-15-3.

The Society administers three Trust Funds, viz., (1) Lady Stephenson Child Welfare Trust Fund, (2) Lady Sifton Child Welfare Trust Fund (Patna) and (3) Lady Sifton Child Welfare Trust Fund, Monghyr. A trust fund for the maintenance of the Child Welfare Centre at Ranchi is also being formed by subscriptions, but the subscriptions are delayed on account of war situation. There were 12 Maternity and Child Welfare Centres working in the year in the province. Out of them eight were affiliated to the Society, viz., three in Patna and one each in Muzaffarpur, Monghyr, Purnea, Ranchi and Jugsalai. The remaining four, viz., three in Jharia Coalfields and one in Chapra worked independently. All these centres have done very useful work and Government are considering the desirability of expanding the activities of Maternity and Child Welfare work in this province. The work of these centres is conducted by Working Committees locally formed through their Honorary Secretaries and Treasurers. The work of all these centres is chiefly of an educational nature including free domicilliary midwifery and free post and ante-natal treatments. Minor ailments are also attended to. Cases requiring hospital treatment are referred to the nearest hospital. Ante-natal cases are regularly visited by the Lady Health Visitors in the homes and simple labour cases are attended to. Informal talks on hygiene are given to the mothers. Babies are given baths, milk sago, etc., and are supplied with warm clothes and *kurtas*.

The Government Materaity Supervisor, Patna, attended the centres under her regularly. As in previous year instructions in knitting and sewing continued to be given at the centres and the articles produced have been commended by the visitors. The average daily attendance at each of the three centres at Patna was 60, 40 and 71. Nursing T. B. mothers were supplied with milk and medicines from the Red Cross Fund. Lady Stewart visited the centres in December 1940 and distributed warm clothings to the people attending the centres. Mrs. Malkani distributed at the centres *kurtas* sent by the Bihar Council of Women.

The Government Maternity Supervisor and her seven midwives continued to do good work in Patna under the supervision of the Professor of Obstetrics and Gynæcology. The Supervisor personally conducted several labour cases in houses and also took cases to the Patna Medical College Hospital for confinement. The midwives, as usual, carried on their duties of conducting normal cases at patients' houses and sent abnormal cases to the Patna Medical College Hospital.

The municipalities of Ranchi, Darbhanga, Purulia and Dhanbad and the Patna Administration Committee also continued to maintain a midwifery service for their respective areas. The Maternity and Child Welfare work was carried on efficiently in the centre at Muzaffarpur. 15 *dais* were trained in this centre out of whom 11 passed.

In Monghyr the work of the Lady Stephenson Maternity and Child Welfare centre showed good progress, the percentage of visitors being higher than that in previous year. Training was given to the *dais* and children and ante-natal cases were examined by the visiting doctor of the centre. The daily average attendance of children who got milk was about 95. The children were given bath at the centre twice a week, given clean *kurtas* and weighed on every Wednesday.

The Maternity centre at Purnea which was started in 1938 is managed by a working committee consistiag of the District Magistrate, as ex-officio President, the Civil Surgeon as ex-officio Secretary and the chairman, municipality, as ex-officio Honorary Treasurer with four members nominated by the municipality and two lady members nominated by the Provincial Branch of Maternity Centre. The lady doctor of the Purnea Sadr Hospital worked as the Maternity Supervisor. A baby clinic styled as "Lady Hallett Clinic" was opened in January 1940. The Maternity Supervisor visited 1,674 houses and attended 147 ante-natal cases and also 1,350 children and 606 infants at their homes. Total number of infants and children that received care at the clinic were 2,197 and 2,244, respectively.

Jugsalai.—The Jugsalai centre in charge of the Medical Officer, Jugsalai dispensary, as its Honorary Secretary and Treasurer, did valuable work throughout the year. The Lady Visitor of this centre satisfactorily carried on the duty of regular home visiting and keeping close watch on expectant mothers and the children of the locality. She also toured in adjoining *bustees* and explained to the people the general hygienic principles of motherhood and the advantage of the Maternity and Child Welfare centre. Quite a number of ante-natal and post-natal cases and children attended the centre and got valuable help.

Ranchi.—Valuable work was done in the Ranchi centre. One *dai* was trained and passed the examination. The Lady Health Visitor of the centre did valuable service to the people attending the centre. Cold weather frocks were given to several children and blankets to some persons. Sweets were also distributed on some occasions. The Health Visitor carried out all duties most methodically and kept the premises and quarters in order.

A few of the local bodies entertained special midwives for maternity work in their respective localities. They also did quite good work in their own sphere.

In Jharia, there were three circles each in charge of a qualified Lady Health Visitor. There are 11 centres under these three circles. All these centres continued to do good work under the guidance of the Chief Medical Officer, Jharia Mines Board of Health. The whole cost was met by the Board. The Executives in charge of the Provincial Victoria Memorial Scholarship Fund made a grant of Rs. 450 towards the cost of the training of *dais*.

CHAPTER VII.

SCHOOL HYGIENE AND MEDICAL INSPECTION OF SCHOOL CHILDREN.

1. The Government are maintaining a special staff of officers for the medical examination of scholars of the high English schools since 1920. This system was subsequently extended to the middle English schools at places where there is also a high English school.

There is a staff of one school medical officer of assistant surgeon grade and one assittant school medical officer of sub-assistant surgeon class in each of the four divisions of the province. These officers visit all the high schools and most of the middle English schools in their respective divisions. There is one Lady School Medical Officer for Bihar who carries on medical inspection of various girls' schools in the province. Besides these some of the medical officers of health of the district boards, also carry out medical examination of the students of the middle schools which are situated at places where there is no high school.

2. *Medical examination of scholars.*—Usually all the new scholars admitted to the schools since the previous visit of the school medical officers are thoroughly examined and a complete medical history of each new entrant is recorded on a prescribed form. All scholars found to be suffering from physical defects at a previous inspection are re-examined and a further note on the defects is recorded. At the end of the inspection, parents or guardians of the defective boys are informed of the particular defects the boys are suffering from and they are recommended to consult their medical attendants or take the boys for treatment to the nearest hospital or dispensary. The medical officers of the dispensaries or hospitals are required to note on the counterfoils of the forms the treatment the boys have received and the results thereof.

During the medical inspection of girls' schools in the year under review 2,335 girl students were examined. 71·90 per cent were found to be suffering from various ailments such as mal-nutrition, defective vision, granular lids, carious teeth, enlarged tonsils, anaemia, bronchitis, ringworm, enlarged spleen etc., and were recommended for medical advice and treatment. The total number of girls who were benefited by medical treatment and were found free from the diseases on next examination during the year was 1,648. A large proportion of diseases and the unsatisfactory condition prevalent among the girl students appear to be generally due to carelessness, deficient or improper food and unhygienic ways of living.

The following is a statement showing the number of children examined by each of the school medical officers and the number recommended for treatment in 1940 :—

Divisions.	Number of children examined.	Number of children recommended for treatment.	Number of children recommended for treatment and found on re-examination to have actually received treatment.	Number of children found to have benefited from treatment.
1	2	3	4	5
Patna	3,311	1,069	365	181
Tirhut	2,936	894	283	164
Bhagalpur	2,979	1,618	1,268	462
Chota Nagpur ..	2,090	867	653	447

From the statement noted above it would appear that out of 11,316 boys examined during the year 4,448 or 39·2 per cent suffered from some kinds of ailments or other. The number of children found suffering from various defects is noted below :—

	Number of children found defective.	Percentage of defective children.
1. Poor nutrition	1,562	13·8
2. Errors of refraction	1,501	13·2
3. Eye diseases such as trachoma, conjunctivitis, blepheritis and corneal opacity.	55	0·4
4. Pyorrhœa and caries of teeth.. ..	485	4·2
5. Enlarged tonsils..	1,298	11 4
6. Adenoids	69	0·5
7. Enlarged glands in the neck.. ..	385	3·4
8. Functional heart troubles	109	0·8

Over and above these, 17 children were found suffering from the organic disease of the heart, two from pulmonary tuberculosis, whilst 70 showed enlargement of spleen and 135 were found to be unvaccinated. During the same period the various Health Officers employed by the district boards examined 3,997 children and of them 959 were found to be suffering from various diseases. Majority of them were found, as usual, to be suffering from poor nutrition, caries of teeth, enlarged tonsils and errors of refraction.

3. *Lectures in hygiene.*—The school medical officers also delivered lectures on hygiene, sanitation and the common epidemic diseases to the students of classes X and XI of the high schools. 1,641 lectures were delivered during the year and of these 171 lectures were illustrated with magic lantern slides. The Lady School Medical Officer, Bihar, delivered 42 lectures to the girl students. Attendance at ten such lectures is compulsory for every boy or girl before he or she is allowed to sit for the Matriculation examination, but as hygiene is not included in the syllabus for the Matriculation examination the lectures do not receive the attention they deserve. A good deal of useful information about Public Health matters is, however, given through these lectures and these are creating an interest among the students in developing healthy habits and in taking preventive measures against diseases. During the summer vacation, these officers devoted themselves as in previous years to special propaganda work by arranging lectures and demonstrations for the village gurus, maulavis and sub-inspectors of schools in different centres.

The school and hostel buildings were regularly inspected by the school medical officers during their visits to each school, 214 such school premises were inspected during the year. The Lady School Medical Officer, Bihar, also inspected 77 school premises. These inspections have definitely helped in recent years in effecting improvements in the general sanitation of these premises. In most of these schools provisions for sanitary conveniences have now been greatly improved and a satisfactory arrangement for the supply of drinking water exists.

The school medical officers and the Lady School Medical Officer during their inspections of the schools also look into the arrangements made for physical exercises, games and suitable sitting accommodation in the class rooms, and by their constant advice they try to impress upon the headmasters, guardians and parents that in their zeal to impart mental education, the physical development of the child should not be neglected.

The scheme for providing mid-day school lunch based on a fee of annas eight per school child per month introduced in Purulia zila school in 1934 have now been taken up by quite a number of the high schools in the province. The system is reported to be working very satisfactorily.

CHAPTER VIII.

PUBLIC HEALTH PROPAGANDA.

A. Public Health Bureau.—The Public Health Department maintains a Public Health Bureau with the object of educating the general public in the elementary laws of hygiene and sanitation and in the simple methods of prevention of epidemic diseases. The Bureau continued to distribute leaflets and pamphlets in different vernaculars on health subjects in the rural and urban areas through the health staff of the districts. Pictorial health posters, models and charts were sent out to be exhibited at the fairs and festivals held in the various parts of the province.

A short summary of the state of the health of the province and of the various activities of the department is issued every month for publication in the press through the Director of Publicity.

All the officers of the Public Health Department during the course of their tours, carried out health propaganda among the people. The School Medical Officers delivered magic lantern lectures to the boys during their inspection of the schools. The Assistant Directors of Public Health, while touring in the rural areas, also gave talks to the villagers on sanitation and the prevention of infectious diseases such as small-pox, malaria, etc.

A pamphlet entitled "Plague in Bihar—Role of rat in the propagation of plague—Rat proof grain godown and dwelling houses" was prepared by the Public Health Bureau and distributed in the plague-affected areas of the province through local bodies.

The officers of the Public Health Department carried out propaganda work on public health subjects by means of charts, posters, models, leaflets and magic lantern slides at the Khunti Exhibition in Ranchi, the Hijla mela in the Santal Parganas the Girls Art and Craft Exhibition, Arrah, Women's Industrial Exhibition, Muzaffarpur, Village Industries Exhibition, Koilgarh in Saran, the Bihta Exhibition, Patna, the All-India Trades Exhibition at Muzaffarpur and the Health Exhibitions at Ranchi, Darbhanga and Deoghar.

Health charts and posters were exhibited and leaflets distributed among the visitors at the Maternity and Child Welfare and Health Exhibition at Kishanganj, Purnea and the Jamshedpur Exhibition and at the Baby Show at Jamalpur.

B. Red Cross Society.—The Red Cross Health Museum located at the Patna Museum was open to visitors throughout the year 1940.

The Health Museum continued to attract a large number of visitors as before from all parts of the province. 122,809 persons, as against 131,135 in the previous year visited the Museum from the 1st January to the 31st December 1940. Of these 25,089 persons visited the Museum on the 14th November 1940 (Kartik Purnima day) as against 22,379 of the previous year.

A care-taker was appointed for one year for the Red Cross Health Museum, Patna, with effect from the 23rd January 1940. He looked after the exhibits and explained them to the visitors and also distributed to them leaflets on public health subjects in English, Hindi and Urdu.

CHAPTER IX.

PUBLIC HELTH ADMINISTRATION.

1. The statement below shows the receipts and expenditure under the head "39-Public Health (Medical)" for the years 1938-39 and 1939-40.

Head.	Receipts.		Head of expdenditure.	1938-39.		1939-40.	
	1938-39.	1939-40.		Budget provision.	Expenditure.	Budget provision.	Expenditure.
1	2	3	4	5	6	7	8
	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.
Sale-proceeds of sera and vaccine, etc.	35,000	34,557	Public Health Establishment.	1,62,604	1,54,435	1,64,430	1,59,627
			Medical examination of scholars and teaching of hygiene in high schools.	36,935	31,201	35,550	30,330
			Bubonic plague ...	7,000	5,621	7,000	7,560
			Malaria ...	14,000	34,931	1,39,040	43,794
			Other epidemic diseases.	1,43,402	1,24,715	2,52,151	2,04,185
			Publicity campaign	1,912	1,961	1,948	2,009
			Public Health Laboratories.	17,903	19,277	20,236	20,193
			Total ...	3,83,756	3,82,141	6,19,385	4,68,298

All requisitions of the Director of Public Health were complied with by the Govenment and funds were made available in most cases.

2. The three Assistant Directors of Public Health, one for South Bihar Circle, with headquarters at Patna; one for North Bihar Circle, with headquarters at Muzaffarpur, and one for Chota Nagpur Circle, with his headquarters at Namkum in the Ranchi district, continued to function as in previous years.

The Assistant Directors of Public Health are employed to investigate into the epidemics, and suggest measures of control and to see that actions taken are adequate to combat the same. They also supervise the prophylactic measures such as vaccination, and anti-cholera and anti-plauge inoculations. They inspect and report on all nuisances occurring in their areas. A systematic inspection of all local bodies, fairs and melas and high schools are included in their legitimate duties. They also carry out propaganda work by lectures and magic lantern demonstrations. Regular inspection of mines and factories in their respective circles have also been added to the routine duties of the Assistant Directors of Public Health. The supervision and advice rendered by these officers have done much in recent years to assist the local bodies in effecting improvements in sanitation and health of the areas

There are four school medical officers and four assistant school medical officers for the four divisions of the province. There is also a lady school medical officer for the girls' schools. In addition to her own duties she is employed as Medical Inspectress of Factories in accordance with the recommendation of the Royal Commission on Labour to examine the health of the female employees of factories in Patna district.

Epidemic doctors of sub-assistant surgeon class are employed temporarily by Government and they are detailed to help local bodies in combating epidemics in the province. Over and above these, 100 reserve vaccinators are provided for duties in the districts, who in addition to vaccination work, are also trained to carry out disinfection during epidemics.

Anti-malarial and kala-azar schemes continued to function in the districts of North Bihar and doctors of sub-assistant surgeon grade were employed to work at the various kala-azar and anti-malarial centres and vaidyas and hakims remained employed in Tibbi and Ayurvedic centres in the Muzaffarpur district.

A medical officer of health who is Personal Assistant to the Director of Public Health is also in charge of the Public Health Bureau which is attached to the office of the Director of Public Health. He also functions as Health Officer, Patna Administration Committee. He contributes popular articles to the press on the public health subjects and prepares and distributes posters, pamphlets and leaflets to the local bodies. He delivers lectures on hygiene to the Police Cadets at the Police Training College, Hazaribagh, and also at *melas* and fairs with the aid of magic lantern slides.

Seven medical officers of health of the Goverment Public Health cadre and four medical officers of health under contract service have been lent to the district boards of Muzaffarpur, Saran, Champaran, Gaya, Bhagalpur, Shahabad, Darbhanga, Santal Parganas, Ranchi, Singhbhum and Hazaribagh to work as health officers of the district boards. A medical officer of health of the department continued to work as the Chief Medical Officer of Health, Jharia Mines Board of Health.

Three medical officers of the cadre have also been lent to the municipalities of Patna, Gaya and Ranchi to work as health officers.

A medical officer was employed as Chemical Analyst at the Public Health Laboratory up to the 22nd September 1940 and the Assistant Chemical Analyst who is a non-medical man and was appointed as officiating Chemical Analyst remained in charge of the Public Health Laboratory from the 23rd September 1940 till the end of the year. The post of the Chemical Examiner for Excise is held by a Chemist who is a non-medical man. A medical officer of the cadre has also been appointed as Officer in charge of the Bacteriophage Laboratory. An officer of the Public Health Department with M. B., D. P. H. qualifications is employed as Assistant to the Officer in charge of the Bacteriophage Laboratory. A medical officer of the cadre has also been appointed as Officer in charge, Nutrition Scheme.

A medical officer of the cadre also works as Superintendent of Vaccine Depot at Namkum. Vaccine lymph is manufactured and distributed throughout the province from this depot.

A medical officer with M. B., B. S. qualification was appointed in April 1940 and was placed in charge of the travelling epidemic dispensary of the Public Health Department. He goes about in the province to combat epidemics and to carry on propaganda work in rural areas.

CHAPTER X.

General Remarks.

1. *Leprosy relief.*—The Bihar Branch of the British Empire Leprosy Relief Association known as the Bihar Leprosy Relief Committee was constituted in 1926. This Committee consisted of twelve members including the President and Secretary. The Adviser to His Excellency the Governor in charge of Local Self-Government Department is the President, and the Inspector-General of Civil Hospitals is the Honorary Secretary and Treasurer.

Meeting.—The Committee hold its annual meeting for 1939 on the 24th January 1940, and that for 1940 on the 2nd January 1941. Both the meetings were presided over by Mr. E. R. J. R. Cousins, C.I.E., I.C.S., Adviser to His Excellency the Governor.

Clinics.—There were 49 outdoor clinics in the year against 46 of 1939. A new clinic was opened in Asanbani in the district of Santal Parganas and one in Chirkunda and the other in Talajuri in the district of Manbhum. 14,704 patients were treated there against 11,355 of 1939.

Asylums.—The number of asylums was nine. 2,743 indoor and 2,745 out-patients were treated in them against 2,707 indoor and 2,248 out-patients of the previous year.

A large number of patients were also treated in the out-door departments of the ordinary hospitals and dispensaries, where separate hours once in a week are fixed for such treatment in some cases in separate sheds specially built for the purpose.

Treatment used.—As regards treatment, Hydnocarpus groups were chiefly used by intradernal, sub-cutaneous, intra-muscular and infiltration methods as needed. E. C. C. O. Hydnestryl, Hydnocreol, E_1, Alepol, etc., were also used in some cases.

Patients with Claw Hand deformities were injected Creosoted Hydnocarpus oil in their interrossie muscles and were instructed to give passive movements and to apply suitable splints.

Cases with connected complications were also suitably treated.

Patients with trophic ulcers are reported to have responded well by local injections of H. O. and application of ointments.

Cases having syphilitic affections were given anti-syphilitic treatments, such as injections of Solusalvarsan, Neosalvarsan, Casbis, etc., and also a solution of aneyl and H. O.

Treatment with pottasium iodide has been generally forbidden.

Dr. Lowe and his staff made experiments with Lepromin on 200 of the leper in-patients and healthy children in the Purulia Leper Home and Hospital. The striking fact was that it was possible to discharge a large number as being free from symptoms or with disease arrested.

Benefits from treatments.—Recent methods of treatment were adopted at the different clinics. Early cases generally showed prompt response and a few of them by their regular treatments even recovered so as to become symptom-free. The secondary state of noduler type of lepers also to a certain extent showed signs of improvement. But the very advanced and bad types of cases which are to undergo treatment for a sufficiently long period for any satisfactory improvement were, as usual, found rather irregular in attendance.

Training of doctors.—During the year 1940 the newly-appointed Leprosy Officer who is a member of the Public Health Service was trained in the Calcutta School of Tropical Medicine and the Health Officer, Santal Parganas, was trained in the Purulia Leper Home and Hospital. Five doctors of the Manbhum district board and one doctor of the Naba Kustha Nibas were also trained in Purulia Leper Home and three doctors in Deoghar Leper Asylum in the year. About 76 doctors have so far been trained in this province.

A proposal for starting a course every year in the Purulia Leper Home and Hospital under the supevision of Dr. Lowe was under consideration for some time. The arrangements and plans for the course were almost complete, when owing to the War and demand of civil doctors for military service, it was found impossible to depute a sufficient number of men to attend it and so the proposal had to be abandoned for the time being.

A course of 20 lectures was delivered to the students of the Patna Medical College at Gulzarbagh clinic by the medical officer in charge. In the Darbhanga Medical School the senior students by batches received their leprosy training in the Darbhanga clinic.

Propaganda.—The Medical officers in charge of clinics visited the adjoining villages, distributed leaflets on leprosy and delivered lectures with the aid of charts, magic lanterns, etc.

In Dhanbad a stall was opened in the Dhanbad Annual Exhibition and much work was done in the way of propaganda.

Survey.—The district board of Manbhum continued the intensive survey it began. Up till October 1940, 157,610 persons were reported to have been examined and 2,607 lepers were detected in 554 villages.

In the Dhanbad subdivision 86 villages of a total population of 20,481 were surveyed. 14,082 persons were examined and 162 cases detected.

As in the district of Manbhum so in that of the Santal Parganas leprosy is badly prevalent, and Government were pleased to sanction the entertainment of a small survey party of three sub-assistant surgeons with the necessary epuipment and staff for a leprosy survey under the Health Officer of the district. The survey has been started in close co-operation with the Provincial Leprosy Relief Committee. The Assistant Director of Public Health, Chota Nagpur Circle, supervises the work and the Bihar Leprosy Officer inspects it.

A systematic house to house survey was also carried out in an area of 2½ miles radius round the Saldaha leper colony in the district of the Santal Parganas.

Twenty-eight villages with a total population of 3,931 were surveyed of which 11 villages were found to contain lepers numbering 28. Out of them 27 cases were diagnosed as leperomatous type and the rest 21 as nevral type.

The post of the Provincial anti-Tuberculosis and Leprosy Officer was continued for another year up to 31st March 1941 and a Medical Officer of Health of the Public Health Cadre was appointed to the post. His services were placed at the disposal of the Inspector-General of Civil Hospitals from the 19th August 1940. He then underwent the necessary training in Calcutta, and took over charge on the 20th October 1940.

The leprosy scheme of Manbhum was also continued for another year and a grant of Rs. 20,300 was made to the district board of Manbhum.

A grant of Rs. 91,370 was provided as capitation grant at Rs. 3-8-0 per patient. The special grant of Rs. 1,140 for encouraging outdoor treatment in the Leper Asylums and the grant of Rs. 3,600 for remuneration to doctors and compounders were also received. An additional grant of Rs. 500 was made to the Saldaha leper colony towards the construction of an indoor ward for which a grant of Rs. 9,000 was received last year.

Necessary provision at the rate of Rs. 3,080 a year was also made for meeting the cost of survey party for the district of the Santal Parganas as stated above.

2. *Tuberculosis.*—17 anti-Tuberculosis clinics have been opened up till now in the districts of this province. They are functioning at Patna City, Gaya, Arrah, Chapra, Motihari, Bettiah, Muzaffarpur, Darbhanga, Bhagalpur, Monghyr, Purnea, Deoghar, Ranchi, Daltonganj, Hazaribagh, Purulia and Chaibassa. At six places, viz., Chapra, Darbhanga, Bhagalpur, Purnea, Daltonganj and Purulia the anti-Tuberculosis clinics have their own buildings. The remaining ones are situated in the premises of the Sadr and Subdivisional Hospitals. At Deoghar the building is under construction and at Gaya, Patna, Arrah, Muzaffarpur, Motihari, Hazaribagh and Chaibassa the work is expected to be taken up during 1941. Until the clinic buildings are ready anti-Tuberculosis work will continue to be done in the out-patient departments of the Sadr and Subdivisional Hospitals. All the clinics are under the control of the District anti-Tuberculosis Association.

At Patna there is a proposal for opening a Cheap Tuberculosis Sanatorium. The plot of land selected for the purpose has not yet been secured. It belongs to Hathwa Raj. The question has been taken up by the Inspector-General of Civil Hospitals with the Board of Revenue.

The staff of each district clinic consists of —

1. An Honorary Medical Officer (M. B.) with special training in Tuberculosis.
2. A male health visitor.
   (A female health visitor is also employed in Patna, Gaya, Darbhanga, Hazaribagh, Ranchi and Bhagalpur.)
3. A part-time sweeper.
4. A part-time peon.

The health visitors visit the houses of the tuberculosis patients, suspected tuberculosis patients and contacts and bring those who require medical help to the clinics and keep them under observation. They teach the patients the methods of disposal of sputum and try to segregate them from other inmates of the houses. The sputum of a case is examined free of charge and X'Ray examination is done at a much reduced rate of Rs. 4 only.

Different kinds of leaflets printed in different languages, viz., Hindi, Urdu, Bengalee and English regarding rest, exercises, diet and treatment, etc., have been supplied to district clinics for free distribution among the public. Home visiting cards and case cards have also been supplied for daily use in the clinics for record and reference. Spitoons and face masks have also been supplied to the district clinics for free distribution to the patients as a preventive measure.

The School Medical Officers in their public health and hygiene lectures to the school students lay special stress on the propagation and prevention of tuberculosis.

The Itki Sanatorium received the following grants from the Red Cross :—

			Rs.
(1)	For a 12 valve Fergusion wireless in 1938	..	425
(2)	For library for the nurses' home	..	100
(3)	For providing a plug for the nurses' sitting room and in the Nursing Sisters' drawing room in connection with the working of the radio set.		40

No tuberculosis survey was carried out during the year.

No particular housing improvement scheme was carried out.

The Secretary to the anti-Tuberculosis Sub-Committee (Director of Public Health) is a member of the Working Committee of the Provincial Tuberculosis Association and its Chairman (Inspector-General of Civil Hospitals) is the Honorary Secretary of the Association.

3. *Cerebrospinal Fever.*—During 1940, ten cases of cerebrospinal meningitis occurred in the Hazaribagh Central Jail, between the 1st April 1940 to 15th July 1940. Of these three ended fatally. All practical steps were taken to control the outbreak. All the cases occurred in the under-trial prisoners. The origin of the outbreak could be traced to the congregation that gathered at Ramgarh during the Congress Session. The first case that occurred in the central jail came from Kujju (Mandar police-station) a village within a few miles from Ramgarh. In Ramgarh one case of cerebrospinal meningitis occurred. This patient was removed to the Ranchi Hospital where he died. One case of meningitis was treated in Hazaribagh Sadr Hospital on the 28th January 1940 and another case on the 1st April 1940.

Incidence from this disease was not reported from any other place in the province during the year under report.

4. *Epidemic Dropsy.*—The province was free from any incidence of Epidemic Dropsy during 1940.

5. *Personal proceedings and office.*—During the year under report the office of the Director of Public Health was held by Lieutenant-Colonel S. L. Mitra, I.M.S. Of the Assistant Directors of Public Health, Rai Bahadur Dr. B. P. Mozoomdar remained in charge of the South Bihar Circle from 1st January to 17th April and from 18th July to 31st December 1940 and Khan Sahib Dr. S. M. Rahman was in charge of the North Bihar Circle from 1st January to 31st December 1940 whilst Rai Sahib Dr. A. N. Chatterjee was in charge of the Chota Nagpur Circle throughout the year. Dr. Azizur Rahman was in charge of the South Bihar Circle from the 18th April to the 17th July 1940.

6. *Touring.*—During the year the Director of Public Health was on tour for 75 days and the Assistant Directors of Public Health, South Bihar, North Bihar and Chota Nagpur Circles for 151, 154 and 149 days, respectively.

7. *Personnel.*—In conclusion I would like to bring to the notice of Government the good work done by the Assistant Directors of Public Health, Rai Sahib Dr. A. N. Chatterjee and Khan Sahib Dr. S. M. Rahman and the Personal Assistant to the Director of Public Health, Dr. Hargobind Prasad. Rai Sahib Dr. S. K. Chatterji, Officer in charge, Bacteriophage Laboratory and Dr. K. Mitra, Officer in charge of Nutrition Scheme, continued to do very useful work. The other officers whose good work deserves special mention are—

Drs. Azizur Rahman, D. B. Mukherji, P. N. Sanyal, P. K. Roy and Gobind Prasad.

B. P. MOZOOMDAR, RAI BHAHADUR,

Director of Public Health, Bihar.

ANNUAL VACCINATION REPORT

OF THE

Province of Bihar for the year 1941.

1. There are three public health circles in the province of Bihar.

2. *Staff.*—Leut.-Col. S. L. Mitra, I.M.S., held charge of the office of the Director of Public Health from the 1st January 1941 to the 24th June 1941. Rai Bahadur Dr. B. P. Mozoomdar held charge of the office of Director of Public Health from the 25th June to 31st December 1941. Dr. A. Rahman was in charge of the South Bihar Circle from 27th June 1941 to the 31st December 1941. Khan Sahib Dr. S. M. Rahman was in charge of the North Bihar Circle from the 1st January 1941 to the 31st December 1941. Rai Sahib Dr. A. N. Chatterji held charge of the Chota Nagpur Circle throughout the year.

The Government vaccination inspecting staff, who worked in six districts only, consisted of six district inspectors, three special inspectors and twenty sub-inspectors. In other ten districts where the public health organisation scheme was introduced and the vaccination work was taken over by the district boards and placed in charge of the Health Officers who acted as Superintendents of Vaccination. The total number of vaccinators employed during the year was 1,241 of whom 83 were employed in towns and 1,158 in rural areas. Vaccination is performed by paid vaccinators in municipal areas while licensed vaccinators are generally employed to perform vaccination operations in the rural areas. Each district has been divided into suitable small areas (*elakas*) and a licensed vaccinator who has also an apprentice under him, is permitted to carry out vaccination within his area or *elaka*. The licensed vaccinator is allowed to charge a fee of annas two to four for each vaccination operation performed in the houses and not more than annas eight for any number of vaccinations performed among the members of a family in a house at one circle. There are also free vaccination depots in areas where the Vaccination Act has been introduced and these are attended to by the vaccinators on fixed days in a week and no fee is charged for carrying out vaccination at these depots. Besides these licensed vaccinators, paid vaccinators are also employed by the local bodies for short periods to deal with outbreaks of small-pox. Over and above these, Government provide for the temporary appointment of one hundred paid vaccinators every year and the Director of Public Health sanctions the appointment of these vaccinators by the local bodies or the Civil Surgeons for such periods as are considered necessary for combating epidemics.

3. *Operations performed.*—2,196,644 vaccination operations were performed during the year. The number of vaccinations performed during this year shows a considerable rise over those of the previous five years. This increase in vaccination does not seem to have effect on case mortality but it is probable that this increased vaccination has considerable effect on case incidence.

The following table shows the gradual rise in the number of vaccinations performed during the last five years :—

Year.	Primary.	Re-vaccination.	Total.
1936-37	9,83,735	602,408	1,586,143
1937-38	990,780	378,969	1,369,749
1938-39	994,795	505,969	1,500,764
1939-40	1,017,374	820,087	1,837,461
1941	938,945	1,257,699	2,196,644

The rate of primary successful vaccination is being maintained at a high level 97·72 as in previous years. The percentage of re-vaccination was 28·97.

4. *Vaccination in municipalities.*—The number of operations performed in municipalities was 290,989 and the number of successful operations was 81,840 of which 35,844 were primary and 45,996 re-vaccinations. The ratios of success in municipalities were 94·36 per cent for primary operations and 18·18 per cent for re-vaccinations.

5. *Vaccination in districts.*—The number of operations performed in rural areas was 1,801,571 and the ratios of success were 97·92 per cent for primary operations and 30·02 per cent re-vaccination.

The Civil Surgeons still continue to be Superintendents of Vaccination in the districts of Ranchi, Hazaribagh, Singhbhum, Palamau, Monghyr and Santal Parganas, where health organization scheme has not yet been introduced or perfected. Steps are, however, being taken to transfer the vaccination work to the District Boards of Ranchi, Hazaribagh, Singhbhum and Santal Parganas which have now qualified health officers and where public health organization scheme will shortly start functioning.

6. *Vaccination in towns and compulsory areas.*—Statement V shows that during the year 13,285 children under one year of age out of an available number of 20,582 or 64·52 per cent were successfully vaccinated.

The towns of Motihari, Bihar, Roserah, Jagdishpur, Chapra, Colgong, Dhanbad, Lalganj, Darbhanga, Samastipur, Katihar, Jamalpur and Raghunathpur show the smallest amount of vaccination work done.

7. *Incidence and mortality from small-pox.*—The total number of deaths that occurred from small-pox in the province during the last ten years was 151,276.

During the first five years the number of deaths was 91,204 while during the next five years it was 60,072. In each of the last five years the mortality was as follows :—

18,216, 6,877, 5,967, 10,785 and 18,227. The provincial ratios of the mortality from small-pox per thousand population during the last five years have been 0·56, 0·21, 0·18, 0·33 and 0·56. There was decrease in the incidence of small-pox in the province in 1927-28. In 1928-29 there was a further reduction and in 1929-30 there was still further reduction in number of cases. In 1930-31 there was a small increase over the figure of 1929-30. In 1931-32 there was a further increase over the figure of 1930-31. In 1932-33 there was still further increase. In 1933-34 there was recorded a great increase over the figure of 1932-33 and in 1934-35 the mortality figure fell down considerably. In 1935-36 the figure was slightly more than the preceding year. In 1936-37 the figure was less than the figure of 1935-36. In 1937-38 and 1938-39 the mortality figures fell down considerably. In 1939-40 the figure was slightly more than the previous year. In 1940-41 the mortality figures were still higher. This year (calendar 1941) the figures came down to 14,598 which is 3,629 less than last financial year (1940-41).

8. *Protection of infants.*—During the year under report the number of children under one year, available for vaccination was 937,036 and the number of successful operation was 283,293 or 302 per thousand. The protection of infants in municipalities is separately shown in Statement V. It gives a ratio of 645 vaccination per thousand of the surviving infant population.

It is quite evident that a large number of children remain unprotected every year in the rural as well as in urban areas. Such a state of affairs should not continue and the Superintendents of Vaccination and the Vaccination staff should be able to devote more time to detecting all unprotected children and getting them vaccinated. Prosecutions under the Vaccination Act are necessary in districts where it has been introduced and vigorous propaganda to win over the objectors in non-compulsory area should be carried on.

The fact that vaccination does not give protection against chicken-pox is still not known to many and not infrequently vaccine lymph and vaccination have been condemned because of some vaccinated children having developed chicken-pox. Further, the failure of vaccination in affording protection in some cases when given during the period of incubation has been the subject of some wrong criticisms by lay people.

Vaccination is carried on by men who are not sufficiently educated but can just read and write their own language. Attempt is being made to recruit men from better class of people who have read up to or passed the middle vernacular examination. The vaccinators who are trained hands are given all necessary instructions regarding the cleanly method of vaccination but cleanliness especially in the rural areas is often not properly observed. It is, however, a fact that vaccinations done under the present circumstances among the dirty children in the insanitary villages prove successful and do not ordinarily become septic. Only occasional complications such as generalised vaccinia and pemphigus like eruptions follow vaccination but their causation is difficult to explain.

9. The general public now do recognise the fact that vaccination is a preventive measure against small-pox but still it is not unusual to find some people both in urban and rural areas who are averse to vaccination. Re-vaccination has not yet become a popular measure; it is objected to by many who either consider it to be unnecessary and prejudicial to health or are unwilling to pay for it. Re-vaccination often has to be done free by paid vaccinators but ordinarily cannot be started in an area unless small-pox is threatening or has actually broken out. In areas where the Vaccination Act is in force primary vaccination is compulsory but unless in emergency the Epidemic Diseases Act be introduced, re-vaccination of childern and adults has to be done by means of pursuation only. Since Immunity conferred by primary vaccination wears off after three to five years, it would not be possible to successfully control small-pox unless re-vaccination at certain ages is also made compulsory. The eradication of small-pox, though a preventable disease, still remains, therefore, a difficult problem to deal with.

The district boards where health organisation schemes have been introduced under qualified health officers have now assumed the responsibility of the control of vaccination in the rural areas.

The Bengal Vaccination Act is enforced in the districts of Patna, Gaya, Shahabad, Hazaribagh, Muzaffarpur, Darbhanga, Saran, Purnea, Champaran, Bhagalpur, Manbhum and in parts of Santal Parganas, Ranchi, Palamau and Singbhum. Introduction of the Act in the remaining areas of the province and special arrangement for mass re-vaccination are necessary.

10. *Inspection of work.*—During the year under report the Assistant Directors of Public Health inspected 20,247 vaccinations (18,954 and 1,293 re-vaccinations).

The Assistant Directors of Public Health were out on vaccination inspection tours in 16 districts. Valuable reports were submitted on the work done in each of these districts.

The Superintendents of Vaccination of the province inspected 45,048 primary and 46,630 re-vaccinations.

11. *Experiments.*—(1) Purification of vaccine lymph with anesthetic ether has been found satisfactory. It does not deteriorate the vaccine in usual transit.

(2) Some children are found to be particularly susceptible to vaccination and suffer from more constitutional disturbances and after effects. It is noticed that such susceptibility is augmented by the following conditions :—

(*a*) Debilitated or undermined condition of health of the child at the time of or a few days before vaccination.

(*b*) Bad and habitual constipation.

(*c*) Protozoal infection of the bowels.

(*d*) Careless damage to the well-developed vaccinia vesicle.

(3) Whether the vaccine lymph manufactured at the Vaccine Depot can be diluted more than 1 in 5 was tried. So far it has been found that it can be diluted to 1 in 7 without any unsatisfactory results when tried on children.

12. *Cost of the Department.*—The total cost of the Vaccination Department excluding that of the vaccine depot during the year as noted in the statement I was Rs. 52,744 and the cost per each successful operation was eight pies.

13. *Personnel.*—In conclusion I desire to bring to the notice of Government the useful work done by the Assistant Directors of Public Health in their respective circles.

Rai Sahib Dr. C. N. Banerji, Superintendent, was in charge of the Vaccine Depot throughout the year. His work continues to be very satisfactory.

B. P. MOZOOMDAR,

Director of Public Health, Bihar.

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